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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/752,464

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Hideki Yamanaka

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EXAMINER

STRANGE, AARON N

ART UNIT

PAPER NUMBER

2153

DATE MAILED: 11/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.	Applicant(s)	
09/752,464	YAMANAKA, HIDEKI	
Examiner	Art Unit	
Aaron Strange	2153	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 27 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-6,8-17 and 21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-6,8-17 and 21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948).                      | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Response to Arguments***

1. Applicant's arguments filed 4/27/06 have been fully considered but they are not persuasive.

2. With regard to claim 2, and Applicant's assertion that Toporek "can not be relied on in support of an increase of window size" (Pages 11-12 of Remarks), the Examiner respectfully disagrees. In alleged support of this assertion, Applicant cites Col 17, Lines 49-52 of Toporek, which states "(t)he present system allowed the client to take advantage of the available bandwidth regardless of the window size". However the window size referred to in the cited section is the TCP window size, not the XTP window size (at least Col 17, Lines 33-39).

Toporek clearly discloses that the XTP window size, which was cited in the Office action of 1/27/06, supports adjustable, increased window sizes (at least Col 7, Lines 51-53 and Col 16, Line 63 to Col 17, Line 20).

3. With further regard to claim 2, and Applicant's assertion that the present claims "recited an aspect of the present invention that is bidirectional and with an increase in both directions" (Page 12 of Remarks), the Examiner respectfully disagrees. The mere existence of modules that receive data in both directions is not a limitation specifying that there is a bidirectional increase in throughput. The only limitations directed to the

method that results in an increased throughput appearing in claim 1 were claimed with regard to the "first receiving module".

It appears that the newly added limitations have sufficiently described increasing the throughput in both directions. However, bi-directional throughput is still provided by Sridhar, as discussed in the Office action of 1/27/06 (at least ¶3). Once again, it will be pointed out that Sridhar explicitly recites that the communications using XTP is bidirectional (at least Col 12, Lines 40-42). Therefore, the acceleration provided by conversion into XTP for transmission over the satellite portion of the link will be bi-directional.

#### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-2,4-6,8-17 and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. With regard to claim 2, the limitation "converting a first protocol at an application layer level for data transmitted from the client to the server into a second protocol at the application layer level" is unclear. It is unclear if Applicant is referring to the well-known application layer of the OSI model or some other "application layer level". The Examiner

recommends that the claims be amended to recite "a first application layer protocol" or a similar recitation to clarify that the protocols are protocols of the well-known application layer. Independent claims 6,10,11,16,17 and 21 recite similar limitations, and are also rejected under the same rationale.

7. All claims not individually rejected are rejected by virtue of their dependency from the above claims.

***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. While the claims are somewhat unclear, as best understood by the Examiner, the presently claimed invention is a system for accelerating the throughput of a client-> server or server->client connection by converting a first protocol into a second protocol for use between two gateway devices that provides a larger window size. Independent claims 2,10, and 16 appear to be directed toward elements located at the server side, and independent claims 6,11, and 17 appear to be directed toward elements located at

the client side. Independent claim 21 appears to be directed toward the method of converting between the protocols. It should be noted that the client side elements and server side elements appear to be components of the same device (described in the specification as an agent relaying device), but are described differently in terms of the order in which they receive, convert, and transmit data.

10. Claims 2,6,10,11,16,17 and 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Sridhar et al. (US 6,266,701).

11. With regard to claim 2, Sridhar discloses a communicating system for relaying a communication between a server and a client, comprising:

a first receiving module capable of (XTP receiver module) (Fig 9, 966) receiving data from a network, the data obtained by:

converting a first protocol (HTTP) at an application layer level, for data transmitted from the client to the server, into a second protocol (modified HTTP) at the application layer level, the second protocol allowing an increase of a data transfer window for a transport layer protocol (XTP supports adjustable sliding windows) (at least Col 7, Lines 51-53; maintenance of the bandwidth-delay product to window size ratio requires a changing window size; also see Col 16, Line 63 to Col 17, Line 20) , so that a larger amount of data to be transmitted at one time than with a data transfer window whose size is not increased (Col 5, Lines 4-22), and by

multiplexing data of multiple connections so that a connection with an increased window size in the transport layer protocol level can be used continuously and the larger amount of data is transmitted to the network by continuously using the second protocol (Col 12, Lines 25-45);

a demultiplexing module capable of demultiplexing the received data (Col 18, Lines 2-7);

a first converting module capable of converting a protocol of the demultiplexed data into the first protocol (communication on the gateway->server segment is the original protocol, HTTP over TCP)(Col 9, Lines 37-39);

a first transmitting module capable of (TCP transmitter module) (Fig 9, 948) transmitting the data converted by said first converting device to the server (data is forwarded to the server over the TCP portion of the link)(Col 9, Lines 37-39 and Col 11, Lines 23-25);

a second receiving module capable of (TCP receiver module) (Fig 9, 936) receiving data transmitted from the server to the client (Col 11, Lines 33-35);

a second converting module capable of converting the first protocol of the data received by the second receiving module into the second protocol (data is converted into modified HTTP over XTP for transmission between the gateways) (Col 9, Lines 30-36);

a multiplexing module capable of multiplexing data of multiple connections converted by said second converting device so that a connection using the increased

window size in the transport layer protocol level can be used continuously and the larger amount of data can be transmitted (Col 12, Lines 25-45 and Col 18, Lines 2-7); and  
a second transmitting module capable of (XTP transmitter module) (Fig 9, 976) transmitting the data multiplexed by said multiplexing module to the network (Col 11, Lines 33-35).

12. With regard to claim 6, Sridhar discloses a communicating system for relaying a communication between a server and a client, comprising:

a first receiving module capable of (TCP receiver module) receiving data transmitted from the client to the server (Col 11, Lines 23-25);

a first converting module capable of converting a first protocol (HTTP) at an application layer level of the received data into a second protocol (modified HTTP) at the application layer, the second protocol allowing an increase of a size of a data transfer window for a transport layer protocol (XTP supports adjustable sliding windows) (at least Col 7, Lines 51-53; maintenance of the bandwidth-delay product to window size ratio requires a changing window size; also see Col 16, Line 63 to Col 17, Line 20), so that a larger amount of data can be transferred at one time than with a data transfer window whose size is not increased (Col 5, Lines 4-22);

a multiplexing module capable of where multiplexing data of multiple connections converted by said first converting module so that a connection with an increased window size in the transport layer protocol level can be used continuously (Col 12, Lines 25-45); and



a first transmitting module capable of (XTP transmitter module) transmitting data multiplexed by said multiplexing device to the network (Col 11, Lines 23-25);

a second receiving module capable of (XTP receiver module) receiving data from the network, the data obtained by converting the first protocol (HTTP) of data transmitted from the server to the client into the second protocol (modified HTTP) and by

multiplexing data of multiple connections (XTP link uses multiplexing) (Col 12, Lines 25-45) so that a connection with in increased window size in the transport layer protocol level can be used continuously, and the larger amount of data transmitted to the network by continuously using the second protocol (data is converted into modified HTTP over XTP for transmission between the gateways) (Col 9, Lines 30-36);

a demultiplexing module capable of demultiplexing the received data (Col 18, Lines 2-7);

a second converting module capable of converting a protocol of the demultiplexed data into the first protocol (the first protocol is used for transmission between the client and the gateway) (Col 9, Lines 27-30);

and a second transmitting module capable of (TCP transmitting device) transmitting the data converted by said converting module to the client (gateway forwards responses to client)(Col 11, Lines 45-49).

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13. Claims 10 and 16 recite substantially identical subject matter to claim 2 and are rejected under the same rationale. Any differences between the claims do not result in patentably distinct claims and all of the limitations are taught by the above cited art.

14. Claims 11, and 17 recite substantially identical subject matter to claim 6 are rejected under the same rationale. Any differences between the claims do not result in patentably distinct claims and all of the limitations are taught by the above cited art.

15. With regard to claim 21, Sridhar discloses a method of relaying communication between a server and a client, comprising:

converting a first protocol (HTTP) in an application layer level of data transmitted from the client to the server into a second protocol (modified HTTP) in the application layer level where a size of a data transfer window in a transport protocol level can be changed (XTP supports adjustable sliding windows) (at least Col 7, Lines 51-53; maintenance of the bandwidth-delay product to window size ratio requires a changing window size; also see Col 16, Line 63 to Col 17, Line 20) , the second protocol allowing a larger amount of data to be transmitted at a time (Col 5, Lines 4-22); and

multiplexing data of multiple connections so that a connection with a changed window size in the transport protocol level can be used continuously (Col 12, Lines 25-45);

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16. Claim 12 is rejected under 35 U.S.C. 102(e) as being anticipated by Toporek et al. (US 6,460,085).

17. With regard to claim 12, Toporek discloses a communicating method, comprising: forming a virtual tunnel (TCP over satellite) having a multiplexing protocol (XTP, modified TCP or XTP-like protocol), where a size of a data transfer window in a transport protocol sent within a multiplexing protocol can be increased (window sizes can be adjusted) (Col 7, Lines 27-28) and a connection with a converted window size in the transport protocol can be used continuously (Col 11, Lines 10-14), for hiding a network delay (connection appears to occur immediately) that takes place between a server and a client (client and server have no knowledge of satellite link) (Col 13, Lines 7-21); and continuously using (Col 11, Lines 10-14) the virtual tunnel as a communication bypass between the server and the client so as to increase a throughput between the server and the client (larger windows allow higher throughput) (Col 7, Lines 27-36).

***Claim Rejections - 35 USC § 103***

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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19. Claims 1,4,9, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sridhar et al. (US 6,266,701) in view of Toporek et al. (US 6,460,085).

20. With regard to claims 1,9, and 15, while the system disclosed by Sridhar shows substantial features of the claimed invention (discussed above), it fails to disclose a buffer buffering data transmitted from the server to the client and accelerating data output from the server so as to increase throughput assigned to a connection to the client by the server.

Toporek discloses a similar system in which data transfer is accelerated across an XTP connection. Toporek teaches buffering data transmitted from the server to the client and accelerating data output from the server (Col 7, Lines 27-36) so as to increase a throughput assigned to the connection to the client by the server (Server can get a linear increase in throughput for an increase in window size) (Col 17, Lines 33-52). This would have been an advantageous addition to the system disclosed by Sridhar since it would have increased the throughput of the connection, resulting in faster downloads for the client.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to buffer data to increase a throughput assigned to the connection, resulting in faster downloads for the client.

21. With regard to claim 4, while the system disclosed by Sridhar shows substantial features of the claimed invention (discussed above), it fails to disclose an idling device

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performing an idling operation corresponding to a resource assigned to the client, wherein said transmitting device transmits data after the idling operation is completed.

Toporek discloses a similar system in which data transfer is accelerated across an XTP connection. Toporek teaches the use of a rate control module which determines whether to send data across the satellite link immediately, or to buffer it and deliver it at a later time (Col 10, lines 60-63). This would have been an advantageous addition to the system disclosed by Sridhar since it would have allowed the gateway to control the rate of transmission of data across the link, controlling congestion.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use an idling device to perform an idling operation and transmit the data after the idling operation has completed, as a means to control congestion on the link.

22. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sridhar et al. (US 6,266,701) in view of Kirkby et al. (US 6,671,285).

23. With regard to claim 5, while the system disclosed by Sridhar shows substantial features of the claimed invention (discussed above), it fails to disclose a charging device performing a charging process for a service provider of the server, wherein said charging device receives a request from the client, determines whether or not the request is to be issued to the server, and when the request is to be issued to the server, transferring the request and charging the service provider.

Kirkby teaches a method of charging network users for use of certain network resources. Kirkby discloses that customers (service providers or end users) (Col 5, Lines 7-12) who need wide bandwidth are willing to pay extra for this service (Col 2, Lines 35-40). Since the satellite link disclosed by Sridhar provides significantly higher bandwidth than a terrestrial link, these users would be willing to pay extra to have their data sent over the satellite link. Kirkby further discloses determining whether a request from a client is to be issued to the server since the service provider is charged only for data which is directed toward its' servers (Col 4, Lines 62-65 and Col 5, Lines 8-12) and users have the option of terminating a call if the tariff is judged to be too high (Col 5, Lines 20-30). This requires determining if the request is to be directed as well as the client and server involved in the connection.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a charging device to charge a service provider for bandwidth consumed by packets directed toward its' server(s).

24. With regard to claim 8, which is similar to claim 5, Sridhar fails to specifically disclose a charging device for charging users for use of the network.

Kirkby also discloses that the charging device discussed with regard to claim 5 may also be used to charge users for bandwidth they consume (Col 4, Lines 51-67).

25. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toporek et al. (US 6,460,085) in view of Kirkby et al. (US 6,671,285).

26. With regard to claims 13 and 14, while the system disclosed by Toporek shows substantial features of the claimed invention (discussed above), it fails to disclose charging a user of the client or a service provider of the server for a communication using the virtual tunnel.

Kirkby et al. (Kirkby, hereafter) teach a method of charging network users for user of certain network resources. Kirkby discloses that customers (Service providers or end users) (Col 5, Lines 7-12) who need wide bandwidth are willing to pay extra for this service (Kirkby, Col 2, Lines 35-40). The virtual tunnel disclosed by Toporek uses a satellite link that provides significantly higher bandwidth than a conventional communications link. Using the tunnel over the satellite link would significantly speed up transfers of large quantities of data. Charging users of the tunnel, in exchange for the increased bandwidth, as disclosed by Kirkby would be advantageous for the users and the owner of the link. Service would be improved for the users of the link, and the owner would profit from the usage. This would work equally well for clients as well as servers using the link, as clients could pay for additional bandwidth to speed up their downloads and servers could improve their upload speeds.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to charge the user of the client and/or the service provider of a server for use of the virtual tunnel over the satellite link. Since the tunnel provides significantly increased bandwidth, the users would be willing to pay the owner for increased performance of file transfers.

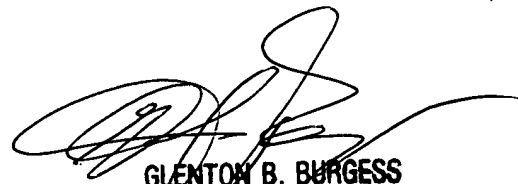
**Conclusion**

27. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron Strange whose telephone number is 571-272-3959. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glen Burgess can be reached on 571-272-3949. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AS  
10/17/06



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